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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/841,757	04/24/2001	Christopher J. Plummer	SUNIP804/P5255	6412

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BEYER WEAVER & THOMAS LLP
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EXAMINER

RUTTEN, JAMES D

ART UNIT PAPER NUMBER

2122

DATE MAILED: 06/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/841,757	Applicant(s) PLUMMER ET AL.	
	Examiner J. Derek Rutten	Art Unit 2122	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 April 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2 June 2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Applicants' amendment dated 24 April 2001, wherein claims 12-17 have been added, is acknowledged. Claims 1-17 remain pending in the application and have been fully considered by the examiner.

Drawings

2. Figures 4 and 5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, following must be shown or the feature(s) canceled from the claim(s):

- a. rewriting native C code (line 4 of claim 1; also claims 7 and 12)
- b. using a native method (line 6 of claim 1; also claims 7 and 12)
- c. using the first opcode to determine association of transition frame with static initializer (claims 2, 8, and 13)
- d. using second opcode to run static initializer (claims 3, 9, and 14)
- e. resuming execution at the second opcode (claims 4, 10, and 15)
- f. use of native method enables execution without interpreter re-entry (claims 5 and 16)

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- g. native C code includes code for identifying the static initializer (claims 6, 11, and 17)

No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

4. The use of the trademark Java has been noted in this application. It should be capitalized wherever it appears and be **accompanied by the generic terminology**.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 5 and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. These claims describe using

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a native method that enables the static initializer to execute without re-entering an interpreter.

While page 9, lines 14-18 of the specification describes using a native method to locate and return the static initializer to the interpreter, lines 20 and 21 describe pushing a Java frame for the static initializer onto the stack, and reentering the interpreter. This passage does not enable one skilled in the art to execute the static initializer without reentering the interpreter.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1, 7, and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claims 1, 7, and 12 contain the trademark/trade name Java. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe an interpreted object-oriented programming language and, accordingly, the identification/description is indefinite.

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10. The term "substantially" in claims 1, 7, and 12 is a relative term which renders the claim indefinite. The term "substantially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Thus, for the purpose of further examination, the phrase "substantially eliminating" has been interpreted as "reducing".

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, 2, 5, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over "The Jalapeno virtual machine" by Alpern et al. (hereinafter referred to as "Alpern") in view of "Tricks of the Java Programming Gurus" by Vanderburg et al. (hereinafter referred to as "Vanderburg") in view of "The Java Native Interface: Programmer's Guide and Specification" by Liang (hereinafter referred to as "Liang").

As per claim 1, Alpern discloses:

A computer-implemented method for reducing C recursion from the execution of static initializer methods in a virtual machine environment (page 213 3rd paragraph of the "JVM organization" section: "In conventional Jvms, run-time services - exception handling, dynamic type checking, dynamic class

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loading, interface invocation, input and output, reflection, etc. - are implemented by **native methods written in C, C++, or assembler**. In Jalapeno these services are **implemented primarily in Java code**.” Reduction of C recursion is inherent in Alpern’s virtual machine, since it is implemented primarily in Java instead of C.), *the method comprising:*

rewriting native C code associated with a static initializer as a Java™ method (Alpern page 213 3rd paragraph of the “JVM organization” section as cited above discloses rewriting C code as Java code; also Alpern page 216 column 2 last paragraph: “When a Jalepeno compiler encounters a **bytecode** (putstatic or invokevirtual, for example) that refers to a class that has not been loaded, it does not load the class immediately. Rather, the compiler emits code that when executed first **ensures that the referenced class is loaded (and resolved and instantiated)** and then performs the operation.” This describes the inherent use of static initializers, since implementation of Java class loaders requires their use.)

using a transition frame in a Java™ stack to execute the Java™ method (Alpern page 216 column 1, the “Method invocation stacks” section: “There is a stack frame for each method invocation.”)

using a first opcode in the transition frame (Alpern page 216 column 2 last paragraph as cited above. Bytecode is comprised of opcodes and resides in the transition frame.).

Alpern does not expressly disclose using a native method to manipulate the Java stack.

However, in an analogous environment, Liang teaches *using a native method to manipulate the Java™ stack* (Liang Section 11.7.2, first paragraph: “The JNI allows **native code** to access fields and **to call methods** defined in the Java programming language.” Method calls result in a new stack frame.).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Liang’s native methods in Alpern’s virtual machine. One of ordinary skill would have been motivated to integrate code written in the Java programming language with code written in other languages such as C and C++.

As per claim 2, Alpern discloses: *wherein using the first opcode in the transition frame includes using the first opcode to determine that the transition frame is associated with the static initializer* (Alpern page 216 column 2 last paragraph as cited above references the “invokevirtual” bytecode which is associated with the static initializer since the virtual machine must first load and initialize a class before it can be referenced.).

As per claim 5, Alpern discloses: *wherein using the native method enables the static initializer to execute without re-entering an interpreter* (Native methods inherently execute without reentering an interpreter since they do not consist of bytecode.).

As per claims 7 and 8, Alpern discloses an apparatus (page 211 column 1, Abstract: "Jalapeno is a virtual machine for Java servers written in the Java language."). All further limitations have been addressed in the above rejections of claims 1 and 2, respectively.

13. Claims 3, 4, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alpern in view of Liang as applied to claim 2 above, and further in view of "The Java Virtual Machine Specification" by Lindholm et al. (hereinafter referred to as "Lindholm").

As per claim 3, Alpern does not expressly disclose running the static initializer using a second opcode.

However, in an analogous environment, Lindholm teaches: *causing the static initializer to run, wherein the static initializer is caused to run by a second opcode* (Lindholm Chapter 6 (pp. 18-20), "invokespecial").

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Lindholm's opcode in Alpern's virtual machine. One of ordinary skill would have been motivated to implement a virtual machine according to a published specification.

As per claim 4, Alpern discloses: *resuming execution at the second opcode after the static initializer has run* (Resuming execution at a call site after the call site invokes a method is an inherent feature of an execution stack. If execution did not resume, the implementation of the Java stack would be faulty.).

As per claims 9 and 10, the above rejection of claim 8 is incorporated. All further limitations have been addressed in the above rejections of claims 3 and 4, respectively.

14. Claims 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alpern in view of Liang as applied to claim 1 above, and further in view of Applicants' admission of prior art on pages 1-3 of the specification (hereinafter referred to as "APA").

As per claim 6, Alpern does not expressly disclose native C code for identifying the static initializer.

However, in an analogous environment, APA teaches: *wherein the native C code includes code for identifying the static initializer* (APA page 2 lines 25-27).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use APA's native C code in Alpern's virtual machine. One of ordinary skill would have been motivated to optimize execution speed of the static initializer by implementation of certain features using native methods.

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As per claim 11, the above rejection of claim 7 is incorporated. All further limitations have been addressed in the above rejection of claim 6.

15. Claims 12, 13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Alpern and Liang as applied to claims 1 and 7 above, and further in view of U.S. Patent 6,061,520 to Yellin et al. (hereinafter referred to as "Yellin").

As per claims 12, 13, and 16, Yellin teaches the use of computer program product (column 11 line 14 – column 12 line 25). All further limitations have been addressed in the above rejections of claims 1, 2, and 5, respectively.

16. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Alpern, Liang, and Yellin as applied to claim 13 above, and further in view of Lindholm.

As per claims 14 and 15, the above rejection of claim 13 is incorporated. All further limitations have been addressed in the above rejections of claims 3 and 4, respectively.

17. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Alpern, Liang, and Yellin as applied to claim 12 above, and further in view of APA.

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As per claim 17, the above rejection of claim 12 is incorporated. All further limitations have been addressed in the above rejection of claim 6.

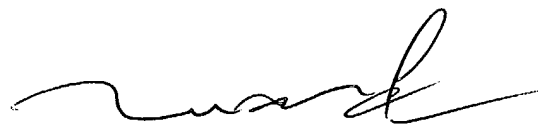
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. Derek Rutten whose telephone number is (703) 605-5233. The examiner can normally be reached on M-F 6:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (703) 305-4552. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jdr


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